



Rural Electrification

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Introduction

As the political, social and business rationale for rural energy access has increased over time various forms of generation have taken hold. Starting out with low capital-cost hydrocarbon based solutions such as diesel gensets, the market has been looking steadily towards renewables such as small hydro, wind, solar PV and more recently biomass as sustainable solutions. Due to relatively high capital investment costs for renewable energy-based solutions tied to perceived risk of the market as an investment opportunity, the market has struggled to develop at scale.

Over the last few years stakeholders, both public and private, have worked hard to position “clean” rural electrification as a financially viable alternative for supplying electricity to isolated regions by deploying a **broader range of renewable energy technologies to suit local conditions**.¹

The **cost of these decentralised renewable energy technologies has diminished dramatically** due to technological innovation and mainstreaming. Moreover energy access is now a goal of the UN agenda and numerous developing countries have established targets for rural electrification. However **two main challenges remain**:

1. Providing adequate regulatory frameworks governing self-sustainable rural electrification markets in developing countries;
2. Facilitating the implementation of sufficient market adequate financing schemes from the public sector to further attract private sector investment.

In general, the **engagement in rural electrification markets in developing countries can be divided into two main groups**:

- (i) Projects financed by development finance institutions, multilateral institutions and other donors, with the use of soft loans or grants. Until recently, most of these focused on Solar Home Systems (SHS) and Local Retail Markets, but now—due to technological advances and the reduction of costs—micro and mini-grid systems have taken on a larger role. In parallel, as early as the 1980’s small entrepreneurs started selling small modules and other components on local retail markets. Over time this activity has gradually attracted large international companies.
- (ii) Increased market- support schemes complemented by higher engagement of communities and private investors (both observed at a low level but with significant increase of interest and engagement). This engagement results in high quality of products, systems, engineering, project management and governance of these initiatives.

Since the establishment of SE4ALL, a number of new initiatives carried out by public and private stakeholders have been formalised and link market development to the reduction of energy poverty;

¹ See for example key outcomes and messages of IOREC 2, organized by IRENA, ARE and ADB in Manila in June 2014
http://www.irena.org/DocumentDownloads/Publications/IRENA_2nd_IOREC_2015.pdf

examples include Electrifi by the European Commission and the Sustainable Energy Fund for Africa (SEFA) by the African Development Bank. Many developing country governments have created dedicated rural electrification agencies and showcased projects and renewable energy targets for non-urban areas.

This level of multi-lateral commitment to accelerating the development of the rural electrification market is, what is required to formalise the market and achieve long-term sustainability.

Challenge Questions

1. Having improved all technical aspects relevant to guarantee access to reliable, clean rural electrification and services and having achieved competitive electricity generation costs, what are the lessons learnt and best ways in the future to:
 - a. **identify** and develop more numerous sites to fill a project pipeline for rural electrification in developing countries?
 - b. **assist** technology providers and local business partners in establishing partnerships for common benefits?
 - c. **form** collaborations between international and local finance as well as between public and private investors?
 - d. **launch** new or increase existing financing facilities, so as to increase the number of projects that can be implemented (stressing the importance of 'good' projects that can e.g. be replicated and scaled up)?
 - e. **attract** more funding to meet the needs of energy poor communities in developing countries?
2. What finance schemes exist for supporting high capital costs of higher cost renewable energy projects versus grid power?
3. What, typically are the major barriers facing project developers when it comes to raising capital to deploy RE rural electrification projects?
4. What specific aspects of rural electrification projects make modelling the business challenging?
5. What countries are perceived to be thought-leaders when it comes to rural electrification policy based on renewable energy?